

WHAT IS CLAIMED IS:

1. A thin-film piezoelectric resonator comprising:

a piezoelectric thin film having piezoelectric
characteristic; and

5 an upper electrode and a lower electrode arranged on
opposite surfaces of said piezoelectric thin film for applying
an excitation voltage to said piezoelectric thin film,

wherein each of said upper electrode and said lower
electrode includes a resonant portion and a lead-out portion,

10 and

an electrode thickness of at least one part of said lead-out
portion in at least one of said upper electrode and said lower
electrode is larger than an electrode thickness of said resonant
portion formed to be continued from said lead-out portion.

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2. A thin-film piezoelectric resonator comprising:

a piezoelectric thin film having piezoelectric
characteristic;

20 an upper electrode and a lower electrode arranged on
opposite surfaces of said piezoelectric thin film for applying
an excitation voltage to said piezoelectric thin film; and

ground electrodes arranged on the same plane with at least
one of said upper electrode and said lower electrode,

25 wherein each of said upper electrode and said lower
electrode includes a resonant portion and a lead-out portion,

and

an electrode thickness of at least one part of each of said ground electrodes is larger than an electrode thickness of said resonant portion in one of said upper electrode and said 5 lower electrode which is formed on the same plane with said ground electrodes.

3. A thin-film piezoelectric resonator comprising:

10 a piezoelectric thin film having piezoelectric characteristic; and

an upper electrode and a lower electrode arranged on opposite surfaces of said piezoelectric thin film for applying an excitation voltage to said piezoelectric thin film,

15 wherein each of said upper electrode and said lower electrode includes a resonant portion and a lead-out portion,

and

20 said lead-out portion in at least one of said upper electrode and said lower electrode is different in electrode material from said resonant portion formed to be continued from said lead-out portion.

4. A thin-film piezoelectric resonator according to

Claim 3, wherein at least one part of said lead-out portion is formed by stacking layers with different electrode materials, 25 where one of said stacked electrode is formed to be continued

from said resonant portion.

5. A thin-film piezoelectric resonator according to any one of Claims 1 through 4, wherein said piezoelectric thin film has a thickness of not larger than 5 μm .

6. A filter including at least one thin-film piezoelectric resonator defined in any one of Claims 1 through 4.

7. A duplexer including at least one thin-film piezoelectric resonator defined in any one of Claims 1 through 4.

8. A method of fabricating a thin-film piezoelectric resonator including a piezoelectric thin film having piezoelectric characteristic, and an upper electrode and a lower electrode arranged on opposite surfaces of said piezoelectric thin film for applying an excitation voltage to said piezoelectric thin film, said method comprising the step of:

froming said lower electrode and said upper electrode, at least one of forming step of said upper electrode and said 20 lower electrode including at least two film-forming and patterning processes, wherein a mask used in the first patterning process is different in shape from a mask used in the second patterning process or in the patterning process after the second patterning process.